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SOURCE Vestnik Mashinostroyeniye, No 3, 12, 1949.DIESEL STANDARDS; DATA ON RUSSKIY DIZEL' PLANT

SOLID INJECTION STATIONARY AND SHIP DIESELS; GOST 4393-48 -- Moscow, Vestnik Mashinostroyeniye, Mar 49

The new State All-Union Standard for types of solid injection stationary and ship engines, to replace OST VKS (All-Union Committee on Standards) 7106, went into effect on 1 March 1949. The new standard covers low-speed (average piston speed up to 6.5 meters per second), and high-speed (average piston speed of 6.5 meters per second and faster), two-cycle (single and double action), and four-cycle diesels.

The standard provides for 12 types of low-speed diesels, and makes it permissible to build two-cycle diesels with a rated aggregate power of 20 to 10,000 brake horsepower, and four-cycle diesels from 5 to 1,000 brake horsepower. The standard provides for ten types of high-speed diesels with a rated aggregate power of from 5 to 6,000 brake horsepower.

The new standard outlines a marked improvement in diesel parameters, as compared to the previous standard:

<u>Parameter</u>	<u>GOST 4393-48</u>	<u>OST VKS 7106</u>
Low-Speed Diesels		
Minimum average piston speed (m/sec)		
Two-cycle diesels	4.25	3.75
Four-cycle diesels	5.0	5.0
Minimum mean effective pressure (kg/sq cm)		
Two-cycle diesels	4.2	4.0
Four-cycle diesels	5.2	5.2
Supercharged four-cycle diesels	7	--

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<u>Parameter</u>	<u>GOST 4393-48</u>	<u>OST VKS 7106</u>
Maximum specific weight (kg/brake hp)		
Two-cycle trunk piston diesels	35	55
Two-cycle crosshead diesels	55	60-70
Two-cycle, double action diesels	45	55-70
Four-cycle diesels	40	75

High-Speed Diesels

Minimum average piston speed (m/sec)	6.5	5.5-6.5
Minimum mean effective pressure (kg/sq cm)		
Two-cycle diesels	4.5	3.5
Four-cycle diesels	5.5	4.5
Supercharged four-cycle diesels	7	--
Maximum specific weight (kg/brake hp)		
Diesels with rotation speed up to 1,000 rpm	15	--
Diesels with rotation speed greater than 1,000 rpm	12	--

Parameters for specific fuel consumption have been established for the first time to stimulate the output of high-quality, efficient engines. Specific fuel consumption for diesels operating at up to 750, 750 to 1,500, and more than 1,500 revolutions per minute, have been set at no higher than 185, 200, and 200 grams per brake horsepower-hour, respectively.

The standard permits a 10 percent increase in specific fuel consumption for single- and two-cylinder diesels, and a 5 percent increase for diesels with pre-combustion chambers.

Each diesel type will have a conventional designation made up to letters and numbers. The letters have the following meanings: Ch--four-cycle, D--two-cycle, DD--two-cycle double acting, R--reversing, S--ship, with reversing coupling, P--with reduction gear, K--crosshead engine, and N--supercharged.

The numbers have the following meanings: first number -- number of cylinders; numerator of fraction -- cylinder diameter in centimeters; denominator of fraction -- stroke in centimeters; the number after the fraction, if present, indicates the modification of the engine (first, second, third, etc.). Examples of the shortened designations are 6ChP 36/53; 4DK 60/110; 8ChN 43/47 3; 3DSF 19/32; etc.

Absence of the letter K in the designation indicates that the diesel is a trunk piston engine; absence of the letter R indicates that it is nonreversible.

The building of several types of special diesels not covered in the standard is permitted.

TRACE DIESEL PLANT PROGRESS -- Moscow, Vestnik Mashinostroyeniye, Dec 40

At the Leningrad Russkiy Dizel' Plant, the number of norm-hours of labor required per horsepower of finished product decreased, between 1917 and 1940, as follows:

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Engine Series

<u>Year</u>	<u>99-III</u>	<u>164-IV*</u>	<u>6S-68</u>	<u>RK-30</u>	<u>8-DR</u>	<u>9-DKR</u>
Up to						
1917	70	64				
1926	56	49				
1935			39	33		
1940					1.75	11

*[Probably a typographical error for 164-VI in following tables.]

Metal consumption, in kilograms per horsepower of finished product, decreased as follows:

Engine Series

<u>164-VI</u>	<u>6S-68</u>	<u>6RK-30</u>	<u>9-DKR</u>
300	250	115	23

Fuel consumption of finished engines, in *grams* per brake horsepower-hour, decreased as follows:

Engine Series

<u>2165</u>	<u>164-VI</u>	<u>6RK-30</u>	<u>6S-68</u>	<u>9-DKR</u>	<u>D-30/50</u>
(1914)	(1916)	(1935)	(1935)	(1940)	(1947)
230	195	195	190	180	170

The 1926 plan for rebuilding the Russkiy Dizel' Plant called for an annual yearly output of 40,000 horsepower, but, by 1931, the plant exceeded this figure and produced 50,130 horsepower. The plant completed its assignment for the first Five-Year Plan in 2 years and 10 months.

The total horsepower of engines produced by the plant in the course of the first two 5-year plans exceeded 300,000 horsepower.

The plant series-produced the "2400" diesel during the first Five-Year Plan, and also built 3,000-horsepower ship diesels at this time.

The next stage was the construction of nine-cylinder, 4,200-horsepower diesels with rotary blowers instead of a scavenging pump. F. N. Mel'nikov and I. P. Matveyev, designers of the diesel, made the engine easier to service and reduced its specific weight to 14 kilograms per horsepower.

In 1941, the plant built and tested an experimental model of a 6,000-horsepower, two-cycle engine designed by Matveyev and G. A. Rudyavskiy. Plans for a 10,000-horsepower, two-cycle, double-acting engine were also developed. However, both of these projects were cut off by World War II.

In 1940, a 2,000-horsepower (at 250 revolutions per minute), two-cycle engine for large merchant ships was designed by N. A. Gostintsev and P. N. Bitkin. The first three of these engines, installed before the war, were given high ratings for dependability and ease of maintenance. The new system of cross port scavenging, designed by Gostintsev, was employed on these engines. It was more effective than foreign systems and lowered fuel consumption to 150 grams per brake horsepower /hour/.

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In 1939, the plant started building two types of small four-cycle high-speed diesels designed by S. I. Levko, of the Scientific Research Diesel Institute, aided by G. S. Strekozov and S. A. Bibilin of the Russkiy Dizel' Plant. They were the 8Ch 16.2/21 250-horsepower, and the 6Ch 23/30 450-horsepower engines, first put into operation in 1940.

In 1938, the plant organized an independent Experimental Design Bureau for Hydraulic Transmissions, headed by A. P. Kudryavtsev, and aided by A. P. Burov and S. I. Mel'nikov. In a short time, the bureau designed and the plant built the 9GM7 hydraulic coupling for the 4,200-horsepower ship engine (which was being series produced); the S-5 hydraulic transmission for transmitting 3,500-horsepower from the engine to the screw, and for reversing the screw when the engine was nonreversing; and the GMT-24 hydraulic coupling for the 8SCh engine for turning and reversing the screw.

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